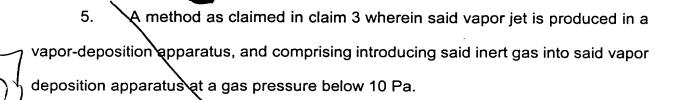
WE CLAIM AS OUR INVENTION:

1. A method for forming fluorescent layers on a substrate, comprising the steps of:

vapor depositing a needle-shaped fluorescent layer, composed of fluorescent material, on a substrate; and

controlling vapor deposition of said fluorescent layer so that said fluorescent layer is deposited on said substrate with a density which is reduced in comparison to a density which said fluorescent material has as a solid, to produce a needle shaped fluorescent layer with optical separation between needle structures.

- 2. A method as claimed in claim 1 comprising controlling said vapor deposition to reduce said density of the fluorescent layer between 5% to 50% of said density that said fluorescent material has as a solid.
- 3. A method as claimed in claim 1 wherein the step of vapor depositing said fluorescent layer comprises producing a vapor jet of said fluorescent material directed onto said substrate, and cooling said vapor jet before said vapor jet strikes said substrate.
- 4. A method as claimed in claim 3 wherein said vapor jet is produced in a vapor-deposition apparatus, and comprising cooling said vapor jet by conducting cool inert gas through said vapor-deposition apparatus.



- 6. A method as claimed in claim 5 comprising introducing said inert gas into said vapor-deposition apparatus at a pressure between 1 Pa and 3 Pa.
- 7. A method as claimed in claim 4 comprising diverting said inert gas with a baffle before introducing said inert gas into said vapor jet.
- 8. A method as claimed in claim 4 comprising discharging said inert gas from said vapor-deposition apparatus with a pump.
- 9. A method as claimed in claim 4 comprising introducing said inert gas into said vapor-deposition apparatus through a control valve.
- 10. A method as claimed in claim 4 comprising conducting argon through said vapor-deposition apparatus as said inert gas.
- 11. A method as claimed in claim 4 comprising introducing said inert gas at a temperature in a range between 0°C and 100°C.
- 12. A method as claimed in claim 11 comprising introducing said inert gas at approximately room temperature.





- 13. A method as claimed in claim 1 comprising cooling said substrate during said vapor deposition.
- 14. A method as claimed in claim 13 comprising maintaining said substrate at a temperature in a range between 50°C and 200°C.
- 15. A method as claimed in claim 1 comprising conducting said vapor-deposition at a rate greater than 1 mg cm⁻²min⁻¹.